

HL 101

Thermal expansion training panel



Learning objectives/experiments

- thermal expansion of different materials such as PVC, PE, copper and steel
- determination of thermal expansion coefficients and the expansion force
- measurement of pipe elongation
- effect of varying pipe diameter
- expansion compensator

Description

- **thermal expansion of different pipe sections**
- **pipe sections can be individually selected using ball valves**
- **water connections made using quick-release couplings**

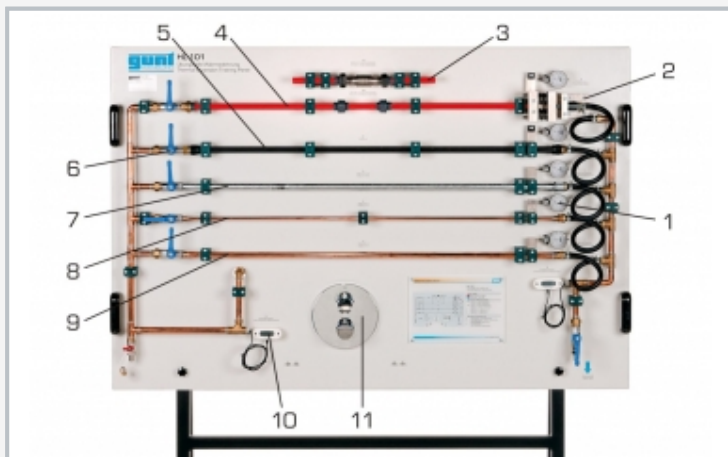
The trainer comprises original components as used in heating and sanitation systems and is therefore relevant in practice.

There are five expansion sections. In one of the sections, a compensator can be inserted. The elongation of the pipes is indicated on dial gauges.

A force measuring device enables the expansion force to be determined.

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1 dial gauges, 2 force measuring device, 3 compensator, 4 PVC measuring section, DN 20x1, 5 PE measuring section, DN 20x2, 6 ball valve, 7 steel measuring section, 1/2", 8 Cu measuring section, DN 10x1, 9 Cu measuring section, DN 18x1, 10 digital thermometer, 11 thermostatic mixing battery

Specification

- [1] investigating the thermal expansion of different pipe sections
- [2] pipe sections can be selected by ball valves
- [3] water connections made using quick-release couplings
- [4] operation with hot and cold water supplies
- [5] adjustment of the water temperature using mixing battery with thermocouple
- [6] temperature measurement using battery-operated digital thermometers
- [7] force measuring device to determine the expansion force

Technical data

Pipe section length: 1000mm

Nominal diameters

- PVC: DN 20x1,5
- PE: DN 20x2
- Cu: 1x DN 10x1, 1x DN 18x1
- steel: 1/2"

Mixing battery connection: 1/2"

Force measuring device

- spring rate per spring: 78N/mm
- total spring rate c: 156N/mm

Measuring ranges

- temperature: 2x -50...90°C

LxWxH: 1650x700x1850mm

Weight: approx. 100kg

Required for operation

cold and hot water connection

Scope of delivery

- 1 trainer
- 1 manual